

1. An air mixing chamber comprising:  
an enclosure;  
an inlet opening formed in said enclosure to form an inlet;  
an inlet tube set in said inlet opening;  
5 an outlet opening formed in said enclosure to form an outlet;  
an outlet tube set in said outlet opening;  
a baffle enclosed inside said enclosure for directing the flow of a stream of air introduced through said inlet tube, said baffle having a section which is tapered to bifurcate the stream of air passing over said baffle and wherein said baffle is angled toward said inlet  
10 so that said stream of air is partially reversed before it passes over said baffle and wherein said baffle has a hole placed therein to allow passage of a portion of said stream of air there through, thereby allowing interaction and agitation between said bifurcated flow of air coming over the top of said baffle and said portion of the stream of air passing through said hole in said baffle;  
15 an opening formed in the enclosure near said outlet tube; and  
a sensor set in said opening to allow sampling of the now thoroughly mixed stream of air.

2. An air mixing chamber as recited in claim 1, wherein said hole comprises  
20 multiple holes.

3. An air mixing chamber as recited in claim 1, wherein said baffle comprises multiple baffles.

4. An air mixing chamber as recited in claim 1, wherein said baffle is substantially triangular.

5. An air mixing chamber as recited in claim 1, wherein at least three sides of said baffle are continuously connected to said enclosure.

6. An air mixing chamber as recited in claim 1, wherein said baffle is essentially rectangular.

7. A method for mixing a stream of exhaled air, said method comprising the steps of:

providing a mixing chamber that houses tapered, angled baffles with holes;

exhaling into said mixing chamber;

5 causing a stream of dead space air to mix with a stream of end-tidal air while inside said mixing chamber by redirecting the flow of said stream of exhaled air; and causing said stream of exhaled air to exit said chamber.

8. A method as recited in claim 7, further comprising the step of sampling said  
10 stream of exhaled air after mixing but before exiting said chamber.

9. An air mixing chamber comprising:  
an enclosure;  
an inlet opening formed in said enclosure to form an inlet;  
an inlet tube set in said inlet opening;  
5 an outlet opening formed in said enclosure to form an outlet;  
an outlet tube set in said outlet opening; and  
a baffle enclosed inside said enclosure for directing the flow of a stream of air introduced through said inlet tube, said baffle having a section which is tapered to bifurcate the stream of air passing over said baffle and wherein said baffle is angled toward said inlet  
10 so that said stream of air is partially reversed before it passes over said baffle and wherein said baffle has a hole placed therein to allow passage of a portion of said stream of air there through, thereby allowing interaction and agitation between said bifurcated flow of air coming over the top of said baffle and said portion of the stream of air passing through said hole in said baffle.

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10. An air mixing chamber as recited in claim 9, wherein said hole comprises multiple holes.

11. An air mixing chamber as recited in claim 9, wherein said baffle comprises  
20 multiple baffles.

12. An air mixing chamber as recited in claim 9, wherein said baffle is substantially triangular.

13. An air mixing chamber as recited in claim 9, wherein at least three sides of said baffle are continuously connected to said enclosure.

14. An air mixing chamber comprising:  
an enclosure;  
an inlet opening formed in said enclosure to form an inlet;  
an inlet tube set in said inlet opening;  
5 an outlet opening formed in said enclosure to form an outlet;  
an outlet tube set in said outlet opening;  
a baffle enclosed inside said enclosure for directing the flow of a stream of air introduced through said inlet tube, said baffle having a section which is tapered to bifurcate the stream of air passing over said baffle and wherein said baffle has a hole placed therein to  
10 allow passage of a portion of said stream of air there through, thereby allowing interaction and agitation between said bifurcated flow of air coming over the top of said baffle and said portion of the stream of air passing through said hole in said baffle;  
an opening formed in the enclosure near said outlet tube; and  
a sensor set in said opening to allow sampling of the now thoroughly mixed  
15 stream of air.

15. An air mixing chamber as recited in claim 14, wherein said hole comprises multiple holes.

20 16. An air mixing chamber as recited in claim 14, wherein said baffle comprises multiple baffles.

17. An air mixing chamber as recited in claim 14, wherein said baffle is substantially triangular.

18. An air mixing chamber as recited in claim 14, wherein at least three sides of  
5 said baffle are continuously connected to said enclosure.

19. An air mixing chamber comprising:
- an enclosure;
  - an inlet opening formed in said enclosure to form an inlet;
  - an inlet tube set in said inlet opening;
  - 5 an outlet opening formed in said enclosure to form an outlet;
  - an outlet tube set in said outlet opening;
  - a baffle enclosed inside said enclosure for directing the flow of a stream of air introduced through said inlet tube, wherein said baffle is essentially rectangle and wherein said baffle has a hole placed therein to allow passage of a portion of said stream of air there
  - 10 through;
  - an opening formed in the enclosure near said outlet tube; and
  - a sensor set in said opening to allow sampling of the now thoroughly mixed stream of air.
- 15 20. An air mixing chamber as recited in claim 19, wherein said hole comprises multiple holes and wherein said baffle comprises multiple baffles.

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